REMARKS

Applicants note the Examiner's statement that a certified copy of the foreign priority document had not been received. Enclosed herewith is a certified copy of German Patent Application No. 103 08 755.9, filed February 28, 2003. Applicants respectfully submit that this perfects the claim of priority under 35 U.S.C. §119.

Claims 1, 2, 4-9, 24 and 26 are pending in the application. Claim 1 is amended to clarify that the entire process is performed continuously. Support for the amendment may be found throughout the specification, e.g., at page 12, lines 1-3, which discloses that the coating mixture may also be prepared not continuously, which implicitly supports preparing the product continuously.

Claims 1, 2, 4-9, 24 and 26 stand rejected under 35 U.S.C. §112, first and second paragraphs, as containing subject matter not described in the specification, and for being indefinite for failing to point out and distinctly claim the subject matter which Applicants regard as the invention. Applicants submit that this rejection has been overcome by the deletion of the term "continuously" in step (a) of Claim 1, and by clarifying that the entire process is performed continuously.

Claims 1, 2, 4-9, 24 and 26 stand rejected under 35 U.S.C. § 103(a) as being obvious over WO 01/05860 ("Klinksiek") in view of U.S. Patent 5,723,518 to Kahl et al. ("Kahl") or U.S. Patent 6,020,419 to Bock et al. ("Bock") or U.S. Patents 3,892,698, 3,892,700 and 3,892,701 to Burke, Jr. ("Burke") or U.S. Patent 4,355,142 to Khungar et al. ("Khungar") or U.S. Published Application No. 2001/00012872 to Dong et al. ("Dong").

Klinksiek discloses an adjustable jet disperser for producing two-component polyurethane emulsions. The Examiner indicates that the process utilizes a mixing nozzle wherein the polyisocyanate and polyol are initially mixed, and a jet disperser (downstream from the mixing nozzle) that performs the same function as Applicants' homogenizer. The Examiner concedes that Klinksiek does not teach or suggest the use of recycle streams through homogenizers or repeat homogenization to improve

dispersions and emulsions. The Examiner contends that such recycle streams were known at the time of the invention, evidenced by the secondary references. Applicants traverse this rejection because none of the references teach or suggest a continuous process utilizing a mixing nozzle and a homogeniser in which a portion of the coating mixture is recycled from the outlet to the inlet of the homogeniser. Even though Kahl et al discloses an embodiment in Figure 5 in which a coating mixture is recycled back into the jet disperser (homogeniser), this reference does not allow for recycle to occur at all times. In Figure 5 valve 44 is connected to an applicator, for example, a spray gun (column 4, line 55 to column 5, line 11). It is only when the coating process is interrupted by closing valve 44 that valve 45 is opened for recirculation in order to avoid pressure build-up. During normal operation no recirculation takes place.

Figure 5 also discloses batchwise mixing. When the process is interrupted and valve 45 is opened, no new materials from the batch mixer are needed. The recycled coating composition fills line 46, pump 40 and mixer 1. If materials were continuously mixed and discharged as required by the present invention, then there would be a build-up of material in the lines and equipment.

The Examiner contends that this argument is immaterial, suggesting that the argument is not commensurate in scope with the claims, as the claims are silent regarding an applicator. Applicants respectfully disagree. The reference to the applicator of Kahl is only necessary to illustrate that the embodiment of Figure 5 is a discontinuous process, because the recirculation is only activated once valve 44 is closed and valve 45 is opened, i.e. when the applicator is disengaged. The loop shown in Fig. 5 provides pressure relief when valve 44 is closed, i.e. no removal takes place. The recirculation stops once the applicator is re-engaged, even though production of the emulsion continues.

Such an argument is fully commensurate with the scope of the claims, as the claims require a continuous process, and the argument illustrates the discontinuity of the process of Figure 5 of Kahl.

In the process shown in Figure 3 of Kahl the repeated homogenisation is performed by forcing the mixture through several homogenisers which are arranged in series. This leads to an increased pressure drop because of the arrangement of the homogenisers in series. In the claimed process the mixture is homogenised repeatedly by flowing more than one time through the same homogeniser with subsequent recirculation. Therefore, the pressure drop which has to be overcome is small compared to that of the process according to Figure 3 of Kahl.

The Examiner contends that this argument does not demonstrate a difference between the claimed recirculation and the arrangement of several homogenisers in series. The Examiner points to the fact that the inventors in Kahl apparently knew how to deal with pressure drop problem, as shown in column 2, lines 66 - column 3, line 2. Applicants respectfully disagree. The mere fact that Kahl suggests a solution to the pressure drop problem (applying an increased pressure) does not mean that the arrangement of several homogenisers in series is the same as the presently claimed recirculation system. To the contrary, the series arrangement is more costly, as it obviously requires increased pumping capacity to overcome the pressure drop, as well as more than one homogeniser. It is noted that the present claims only require the use of a single homogeniser. Furthermore, Kahl's suggested alternative to the embodiment of Figure 3 is the embodiment of Figure 5, which is a discontinuous system. To that extent, Kahl teaches away from the use of a continuous recirculation system as required by the present claims.

Based on the teachings of Klinksiek and Kahl it would not be obvious to combine mixing in a mixing nozzle with a homogeniser using a recycle stream in a continuous process.

The deficiencies of Klinksiek are also not overcome by the teachings of the other secondary references. Even though the Burke, Jr. references disclose the use of homogenisers and recycle, these references do not suggest the combination of mixing in a mixing nozzle to form a pre-emulsion in combination with recycle to the homogenisers in a continuous process. Khungar et al and Dong et al also suffer

from the same deficiencies as the Burke, Jr. references because they also fail to disclose the advantages which are related to continuous mixing prior to homogenising and, in particular, do not disclose the use of a mixing nozzle as mixer.

With regard to Khungar, although lines 39-43 of column 5 refer to possible recycling, lines 46-50 of column 5 refer to the possibility of a number of homogenizers being provided "in series" to provide the same result as "recirculation". It is thus clear to one of ordinary skill in the art that only batch recycling can be meant, since only such batch recycling ensures that each fluid particle passes through the homogenizer as frequently as the number of recycling operations. In the continuous recycling process described in the present application, there is just one hydrodynamically mean flow coefficient, i.e. the frequency distribution of how often which portion of the fluid particles passes through the homogenizer. Thus, the arrangement of dispersers in series is not the same as continuous recycling.

With regard to Dong, paragraph [0015] of the description makes it clear that the processes concerned are carried out in steps. "After blending, the mixture is fed to a homogenizer. . . once homogenized, the emulsion is fed . . . ." The reference does not refer to the continuous removal of the emulsion and the process described is therefore different than the presently claimed process.

The Examiner relies upon Kahl et al and Bock et al for a disclosure of the use of homogenisers in series, which he considers to be analogous to using a recycle stream. However, as previously discussed when homogenisers are used in series a pressure drop occurs in each homogeniser. Therefore, the material must be under sufficient pressure to be able to pass through all of the homogenisers.

To the contrary when the coating mixture is passed repeatedly through the same homogeniser it can be repressurized before it reenters the homogeniser by the circulation pump. Therefore, the use of homogenisers in series is not completely analogous to recycle, especially when low pressures are maintained in the system as required by Claim 2.

Based on the preceding comments, it is submitted that the references do not disclose the advantages that are obtained by continuously mixing prior to homogenization and do not disclose the use of mixing in a mixing nozzle in combination with the use of homogenisers and a recycle stream in a continuous process. In addition, none of the references disclose or suggest the modifications that would be necessary to be able to use recycle in the Kahl et al process during normal operation as opposed to only recycling during an interruption in the process.

Because no combination of Klinksiek, Kahl, Bock, Burke, Khungar or Dong disclose, teach or in any way suggest the claimed process, the claims are not obvious over those references. Therefore, the rejections of Claims 1, 2, 4-9, 24 and 26 under 35 U.S.C. § 103(a) should be withdrawn.

In view of the above amendments and remarks, allowance of all pending claims is respectfully requested.

Respectfully submitted,

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